

**DRAFT
ENVIRONMENTAL ASSESSMENT**

**MOUNT HAGGIN WMA-SOUTH
GRAZING LEASE RENEWAL
February 2011
MEPA, NEPA, MCA 23-1-110**

I. PROPOSED ACTION DESCRIPTION

1. Type of proposed state action: Montana Fish, Wildlife & Parks (FWP) proposes to maintain a cooperative rest-rotation grazing program on the Mount Haggin Wildlife Management Area (WMA)-South system. This 10-year program would extend from June 2011 through October 2020, and continue the current fee grazing usage of 321 Animal Units/1,191 Animal Unit Months (AU/AUM), for three local livestock producers (Clyde Thompson 141 AU/523AUM, Bacon Ranch 130AU/482AUM, and Ralston Ranch 50AU/186AUM). In addition, the program proposes an increase of use by the Ralston Ranch for an additional 178 AU/658 AUM, through an exchange of use agreement. This would bring the total livestock use on the Mount Haggin WMA-South grazing system to 499 Animal Units and 1,846 Animal Unit Months. The annual period of use would continue to be June 15 through October 5.

Three agencies currently administer the program: Fish, Wildlife & Parks (FWP), the U.S. Forest Service (USFS), and the Bureau of Land Management (BLM). This cooperative agency format began in 2002, though FWP has operated a grazing system on this portion of Mount Haggin WMA since 1984.

The proposed grazing program would encompass 12,091 FWP acres, 6,847 USFS acres, and 473 BLM acres. The total affected area comprises 19,411 acres, including 11 streams and 37 stream miles on the WMA.

Contingent upon the increase of use by the Ralston Ranch, the following will occur:

- An overall decrease of permitted grazing use on Mount Haggin WMA. A separate Mount Haggin WMA grazing lease (Mount Haggin WMA-North lease, held by the Willow Glen Ranch) that allowed 640 AU/2,560 AUM of use was terminated in 2007 and left unfilled. With this proposal, 178 AU/659 AUM of that usage will be filled, plus the 321 AU/1,188 AUM already allowed. Total permitted usage on Mount Haggin WMA-South, including the additional use by the Ralston Ranch, will represent a 48% overall reduction of recent use (i.e. 499 AU/1,846 AUM versus 961 AU/ 3,556 AUM).
- In lieu of payment to FWP for the increased grazing use, the Ralston Ranch will enroll approximately 2,600 acres of deeded ground in a 15-year Upland Game Bird Habitat Enhancement Program (UGBHEP) contract. Terms of this contract will include a rest-rotation grazing system applied to deeded ground and the associated BLM allotment in Connor Gulch (2,600 acres). This would reduce stocking rates and provide 50-80 hunter days. The last five years of the UGBHEP contract will be contingent upon renewal of the

Mount Haggin WMA-South grazing lease in 2020. The area affected by this contract comprises mountain grouse habitat, primarily for dusky (blue) grouse. In addition, it also serves as elk winter range during years of moderate winters. In 2010, this area wintered 100-130 head of elk including 5,200 acres, 7 streams and 10 stream miles of riparian habitat.

- The Ralston Ranch will relinquish two grazing permits on the USFS Lincoln Park and Calvert Hill grazing allotments. The USFS will not fill these permits behind the Ralston Ranch. Letters of intent from both parties are on file at the FWP Butte office. This action will give the USFS more management flexibility to deal with resource issues on these allotments and ultimately will improve 5,200 acres of rangeland through reduced livestock use. These allotments contain important elk calving and winter range. Again, the total affected area includes 5,200 acres, 7 streams, and 17 stream miles of riparian habitat.
- Implementation of the grazing plan for deeded and BLM ground as described in the Upland Game Bird contract will facilitate a rest-rotation grazing system. This system will satisfy the terms of the Ralston Ranch's Candidate Conservation Agreement with Assurances (CCAA) plan for Big Hole Arctic Grayling (10-year Agreement). This will also enhance actions already taken on the Ralston Ranch and allow the continuation of more improvement projects. These projects will improve in-stream flows, allow fish passage, and reduce/eliminate entrainment in irrigation ditches for the benefit of grayling and other native fish species.

Full implementation of this proposal and all its contingencies will positively affect 29,811 acres, 25 streams, and 64 stream miles across state, federal, and private lands for the benefit of fish, wildlife, and the recreating public.

2. Agency authority for the proposed action: FWP has the authority under Section 87-1-210, M.C.A. to protect, enhance, and regulate the use of Montana's fish and wildlife resources for public benefit now and in the future. Any consideration of continued livestock grazing on Mount Haggin WMA would have to be consistent with the management goals and objectives as outlined in the Mount Haggin WMA Interim Management Plan (1980). The interim management plan states that Mount Haggin WMA will be managed for dispersed outdoor recreation activities. These activities must be consistent with the area's ability to support such use without degradation of its natural resource values (wildlife, fisheries, vegetation, and cultural/historical resources). The plan describes activities that are aimed at protecting the basic soil, vegetation, and water resources of the WMA such as the implementation of a grazing system that will maintain or enhance wildlife and wildlife habitat. In addition, the FWP Commission must approve all grazing leases on Wildlife Management Areas owned by FWP.

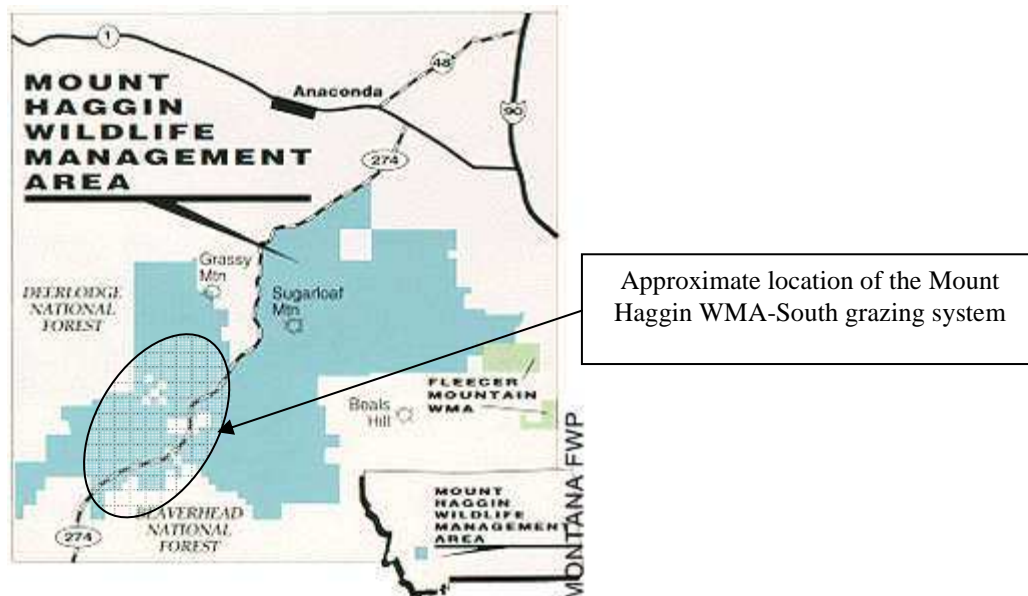
Note: The Mount Haggin WMA Interim Management Plan is in the process of being revised and is expected to be completed later in 2011.

3. Anticipated Schedule: Public Comment Period: Wednesday, February 2 – Monday, February 28, 2011.

Presented to the FWP Commission for Approval: April 14, 2011
Proposed Leases in Effect: June 16, 2011

4. Location: This grazing system is located on portion of the Mount Haggin WMA in Deer Lodge County in southwestern Montana (Figure 1). The Mount Haggin WMA-South allotment is situated in the southwestern portion of the WMA, approximately 15 miles south of Anaconda. WMA lands included in this grazing program border USFS lands administered by the Beaverhead-Deerlodge National Forest. In addition, several parcels of land administered by the Bureau of Land Management are embedded within the WMA. They are managed as part of the Mount Haggin WMA-South grazing system, as per a Memorandum of Understanding (MOU) between the two agencies. The cooperative grazing system is located within Township 2 North, Range 11 West; Township 2 North, Range 12 West; Township 3 North, Range 11 West; and Township 3 North, Range 12 West.

Figure 1: General Location of the Affected Area



5. Project size (acres are for the WMA portion of the project only):

	<u>Acres</u>		<u>Acres</u>
(a) Developed:		(d) Floodplain	<u>0</u>
Residential	<u>0</u>		
Industrial	<u>0</u>	(e) Productive:	
(existing shop area)		Irrigated cropland	<u>0</u>
(b) Open Space/Woodlands/	<u>0</u>	Dry cropland	<u>0</u>
Recreation		Forestry	<u>2,474</u>
(c) Wetlands/Riparian Areas	<u>2,096</u>	Rangeland	<u>7,775</u>
		Other	<u>219</u>

6. Costs and Jurisdictions:

(a) Permits: none

(b) Costs to FWP: replace 0.6 miles of non-functioning jack-leg fence and install 1 mile of new fence. An additional 3 miles of boundary fence between FWP and USFS is proposed to be replaced in 2011, but funding for this project is expected to come from a USFS Resource Advisory Committee (RAC) grant.

(c) Other Overlapping or Additional Jurisdictional Responsibilities: State Historic Preservation Office

7. Need for Proposed Action:

History of Proposed Action

Livestock grazing on Mount Haggin WMA lands has occurred since the turn of the last century. Homesteaders claimed lands in this area because of its natural meadows and ample water. Many of their cabins can still be found throughout the WMA. During the 1910's, the Anaconda Mining Company purchased most of these homesteads and amassed the lands that now make up Mount Haggin WMA and much of the surrounding USFS lands. The Mount Haggin Livestock Company, a subsidiary of the mining company, ran cattle, horses, mules, and sheep on the property in addition to haying many of the native grass meadows (Drummond 1997). Much of the livestock use occurred from June through September annually in a continuous grazing fashion. At its height, Mount Haggin Livestock summered upwards of 8,000 sheep on the Mount Haggin area while running a world-class Hampshire sheep operation. The buildings that remain at the Mule Ranch on the WMA are relics of that era.

FWP acquired Mount Haggin WMA in 1976 from the Nature Conservancy, who had bridged the land deal with the Anaconda Mining Company until department funds could be gathered. Along with the property, FWP inherited a grazing lease for 2,000 cows on the WMA from June to November with no control on rest from grazing. The inherited lease expired in 1984, and FWP was able to implement a complete rest-rotation grazing system. This system was based on principles described by Hormay (1970) on the south side of the WMA and reduced permitted usage by half. August L. Hormay consulted with FWP to design the grazing system. This grazing system was initially contained solely on the WMA and the embedded BLM land. This BLM land is managed as part of the WMA through a Memorandum of Understanding. The system was expanded in 2002 to include the adjacent USFS Seymour allotment, resulting in the formation of two 3-pasture rest-rotation grazing systems (North and South). The systems were cooperatively managed by the USFS, BLM, and FWP. This redesign of the grazing system was intended to benefit wildlife by removing land ownership boundaries and conducting grazing over an expanded area, with large rest pastures available for the exclusive use of wildlife. FWP had the opportunity in 2007 to terminate the lease on the North grazing system and did not fill in behind it. Since that time, two of the pastures in that system (Tenmile and Mule Ranch) have rested from livestock grazing while the third pasture (California) has been included in the rotation of another Mount Haggin WMA grazing system (German Gulch).

With this proposal, FWP would adjust the Mount Haggin WMA-South grazing system to incorporate the Tenmile and Mule Ranch pastures (Figure 2). The lower end of the Mule Ranch pasture, because of existing fencing, would be utilized as a separate pasture (Salt Ridge) to aid in the rotation. This will allow for better disbursement of livestock grazing across larger areas. Stocking rates under the current system are approximately 5-9 acres per AUM, depending on

pasture and season of use. The proposed system's stocking rates will be approximately 7-11 acres per AUM. Table 1 gives the projected 10-year grazing formula for the Mount Haggin WMA-South system as well as the approximate percentage of land contributed to each pasture complex by agency.

Table 1: Projected livestock grazing formula and agency contribution of land for the Mount Haggin WMA-South cooperative grazing system, 2011-2020.

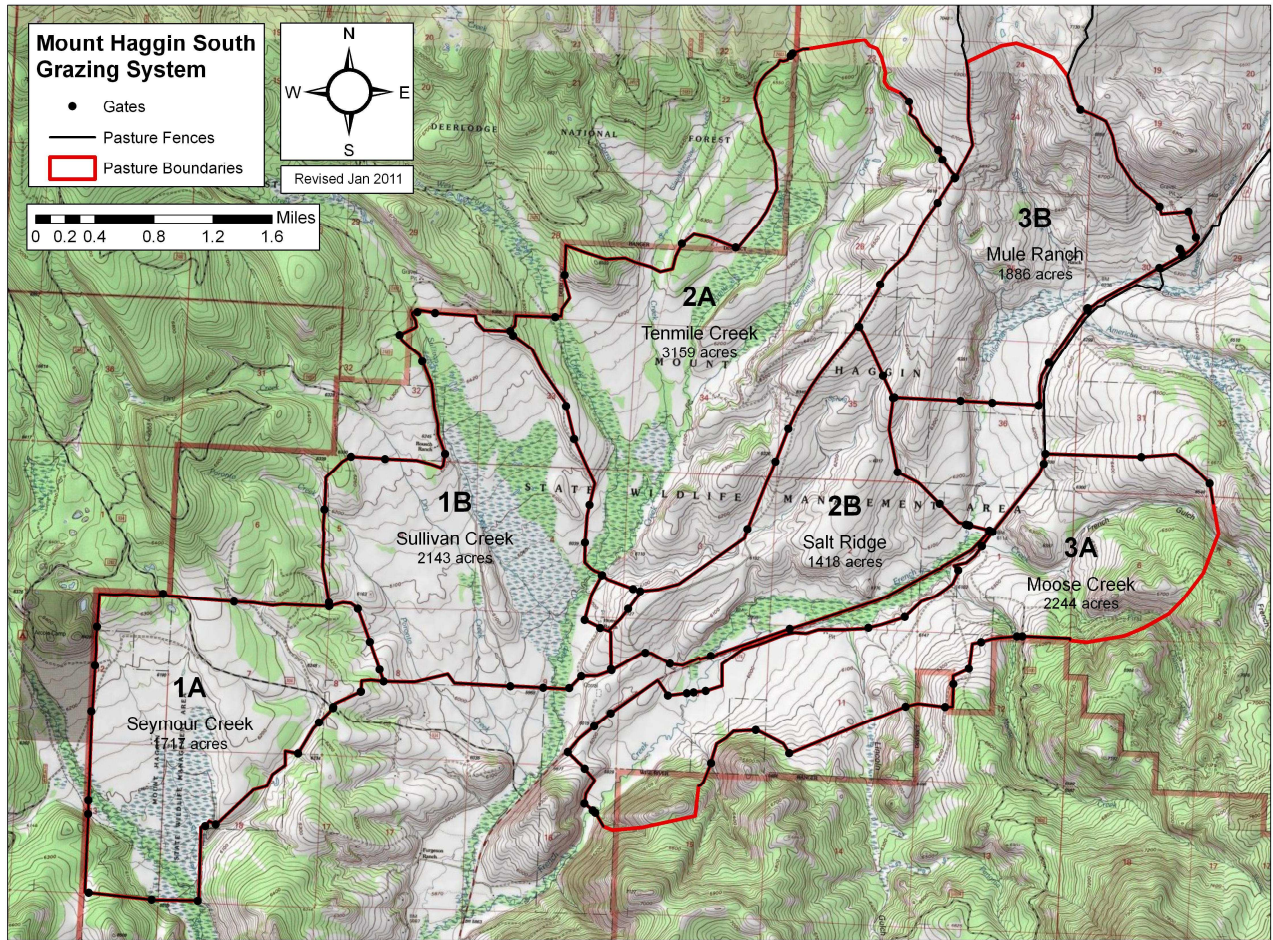
PASTURE	OWNERSHIP	YEAR		
		2011 2014 2017 2020	2012 2015 2018	2013 2016 2019
1A (Seymour) and 1B (Sullivan)	FWP: 60% USFS: 30% BLM: 10%	EARLY	LATE	REST
2A (Tenmile) and 2B (Salt Ridge)	FWP: 75% USFS: 20% BLM: 5%	LATE	REST	EARLY
3A (Moose Cr) and 3B (Mule Ranch)	FWP: 85% USFS: 0% BLM: 15%	REST	EARLY	LATE

Early – dates are approximately June 16 through August 15

Late – dates are approximately August 15 through October 5

Rest – allows for no livestock grazing

Figure 2: Map of the Mount Haggin WMA-South cooperative grazing system. Pasture boundaries as shown include FWP property and embedded BLM parcels that are managed as part of this grazing system. USFS portions of the pastures are not shown on this map but extend from the Seymour, Sullivan, and Tenmile pastures. Acreage listed includes FWP land as well as 473 acres of BLM administered property embedded within and managed as part of the WMA.



One of the terms of the Mount Haggin WMA-South grazing lease is that lessees are responsible for maintaining existing WMA pasture fences. FWP is responsible for providing materials and any fence replacement or construction. Several fencing projects associated with this grazing system have occurred since 1984. Table 2 lists these expenditures. In order to fully implement the grazing system as proposed in this assessment, two fencing projects are required. The first involves replacing 0.6 miles of non-functioning 25+ year old jack-leg fence plus erection of 1 mile of new fence in the Mule Ranch pasture. The other fencing project is located on the boundary between USFS and FWP property in the Tenmile Creek drainage. Funds from this project are expected to come from a Beaverhead-Deerlodge National Forest Resource Advisory Committee grant, while funds for the Mule Ranch fence project will come from WMA operation and maintenance funds.

Table 2: Maintenance costs associated with the grazing system on the south side of Mount Haggin WMA, 1988-2010.

YEAR	PROJECT	COST
1996	4 Fencing projects	\$67,440
1997	2 Fencing projects	\$49,307
1998	1 Fencing project	\$15,455
1999	5 Fencing projects	\$76,375
2002	1 Fencing project	\$85,700
2003	5 Cattle guards	\$7,600
2007	Haul old barbed wire	\$1,600
2008	Vegetation exclosure fence	\$1,600
TOTAL COST		\$305,077

Since the inception of the program in 1984, a total of at least 38,996 AUM of livestock use has been provided on the WMA. Grazing fees generated a minimum total of \$519,456.91 (data is missing for some years), which was used in part to support the operation and management of the WMA. Refer to “Appendix A: Stocking Rates on Mount Haggin WMA-South and North” for more details.

Need for Proposed Action

The proposed action is to maintain the cooperative Mount Haggin WMA-South grazing program, with an expansion of the current usage to over 30,000 acres, 25 streams, and 64 stream miles. This goal would benefit of fish, wildlife, and the recreating public across state, federal, and private lands.

The need for the proposed action is to:

- Maintain or improve soils, vegetation, and riparian zones through systematic grazing;
- Maintain high-quality vegetation for seasonal use by wildlife through planned rest from grazing across multiple ownerships;
- Demonstrate the compatibility of wildlife and domestic livestock grazing; and
- Economically benefit local communities through viable wildlife, recreation and livestock production.

8. Alternatives:

Alternative A: Renewal of the Mount Haggin WMA-South grazing lease with an increase in AUM’s for the Ralston Ranch.

This alternative would continue the cooperative grazing system between FWP, USFS, and BLM on Mount Haggin WMA-South for ten additional years. This plan would be in accordance with the livestock grazing formula presented in Table 1 and map shown in Figure 2. Current usage of fee grazing would continue (total 321 Animal Units/1,191 Animal Unit Months) for three livestock producers (Clyde Thompson 141 AU/523AUM, Bacon Ranch 130AU/482AUM, and Ralston Ranch 50AU/186AUM). The Ralston Ranch would also be allowed an increase of use

by an additional 178 AU/658 AUM through an exchange of use agreement (i.e. enrollment in a 15-year Upland Game Bird Habitat Enhancement Project contract). This would bring the total livestock use on the Mount Haggin WMA-South grazing system to 499 Animal Units and 1,846 Animal Unit Months. The annual period of use would continue to be June 15 through October 5. Contingent upon this action, several resource management actions will occur (described on pp. 1-2). These actions would positively affect 29,811 acres, 25 streams, and 64 stream miles across state, federal, and private lands for the benefit of fish, wildlife, and the recreating public.

Alternative B: Renewal of the Mount Haggin WMA-South grazing lease without increasing AUM's for the Ralston Ranch.

This alternative would continue the cooperative grazing system between FWP, USFS, and BLM on Mount Haggin WMA-South for ten additional years in accordance to the livestock grazing formula presented in Table 1 and map shown in Figure 2. There would, however, be with no increase in Ralston Ranch AU's or AUM's. Total livestock use on the Mount Haggin WMA-South grazing system would continue to be 321 Animal Units and 1,191 Animal Unit Months. The annual period of use would continue to be June 15 through October 5. None of the contingent resource management actions as described on pp. 1-2 will be taken.

Alternative C (No Action): Elimination of livestock grazing on the Mount Haggin WMA-South grazing system.

This alternative would completely eliminate livestock grazing on this portion of Mount Haggin WMA. This would nullify the cooperative agreements with the USFS and BLM and would likely lead to increased use of USFS pastures that currently receive scheduled rest under the agreement. None of the contingent resource management actions as described on pp. 1-2 will be taken.

II. EVALUATION OF IMPACTS ON THE PHYSICAL ENVIRONMENT

1. Vegetation

The portion of Mount Haggin WMA where the South grazing system is located varies from 5,500 feet to 8,000 feet; annual precipitation is about 20 inches. The area is a mixture of wet and dry meadow types, grass/shrubland, and conifer forests. Willows are common along numerous stream courses and wide riparian areas enhanced by beaver dams. Lodgepole pine is the most common forest cover type, occurring in small patches throughout the area; much of the lodgepole forest in this and the surrounding area has been heavily impacted by the mountain pine beetle. Engelmann spruce is also present in small populations near riparian areas.

Homesteaders first occupied the area that is now Mount Haggin WMA. Livestock grazing occurred regularly on the WMA from the early 1900's until FWP acquired the property in 1976. Later in response to the "Smoke Case", the Anaconda Mining Company (the Company) began acquiring these homesteads and eventually amassed the contiguous piece of land that comprises the WMA and much of the surrounding USFS lands (Drummond 1997). Mount Haggin Land and Livestock ran a world-class Hampshire sheep operation on the WMA in the 1920's, under ownership of the Company, grazing upwards of 8,000 sheep annually on the Big Hole side of the WMA. The Company also regularly grazed cattle, horses, and mules on the WMA. The Company used a continuous grazing strategy primarily from early June through late. This type of use significantly reduced forage for wildlife, nesting and hiding cover for birds, amphibians,

reptiles and other mammals, and negatively impacted willow and other riparian communities along stream corridors. FWP eliminated livestock grazing from the WMA from 1976 until 1984, when a rest-rotation grazing system was implemented on the Big Hole side of Mount Haggin WMA.

In addition to livestock grazing, much of the Mount Haggin WMA area was logged several times during the last century. FWP had inherited a logging contract along with the purchase of the property that allowed for commercial harvest of more than 40 million board-feet of timber. This logging continued from 1976-1990 when the contract finally expired. Mining also played a significant role in the Mount Haggin WMA history. One of the first gold mining districts in the greater Butte area was located in French Gulch on the Big Hole side of the WMA. Five patented mining claims exist along California Creek, and remnants of the mining days can still be found throughout the WMA and surrounding USFS lands.

Long-term vegetation monitoring has taken place on Mount Haggin WMA since 1986. Thirty-four permanent photo points, comprising a total of 167 photos, were established on the WMA. Twenty-nine of these photo points, comprising a total of 110 photos, are located within the Mount Haggin WMA-South and North grazing systems to monitor impacts over time. Sites preferred by cattle included historic salting areas or resting areas where use by livestock is intense. These were the preferred sites for photo monitoring. The rationale used was that if positive changes became apparent at these intensely used locations, then it could be assumed that less intensely used areas were also improving. This approach was used because the grazing program is not a research project but an ongoing management action, and monitoring is included with other duties of the wildlife biologist on the WMA. Based on this monitoring, the habitat on Mount Haggin WMA has responded positively under the implemented rest-rotation livestock grazing (Frisina and Keigley 2004).

Two vegetation exclosures, as well as the photo plots, are located within this grazing system. Erected on the WMA in 1986, these structures were designed to keep cattle out but allow entry to wildlife so that grazing impacts to vegetation can be monitored. A more rigorous and repeatable system was implemented in 2006 to replace the monitoring that had been done at these sites since 1986. This system includes two permanent transects within and two permanent transects outside each exclosure. These transects provide quantified Daubenmire (1959) canopy cover and line intercept data and are read approximately every five years by the FWP botanist.

There have been several studies conducted to assess the effects of livestock grazing on wildlife. A study conducted on the Fleecer WMA (Wambolt et al 1997) examined the affects of cattle grazing on the nutritive quality of bluebunch wheatgrass, an important forage plant for elk. The study found no significant difference in nutrient content from bluebunch wheatgrass that is grazed in the spring by cattle over that which is totally rested for one year or never grazed during the growing season. However, the amount of more desirable current year's growth of bluebunch wheatgrass that is available to elk is likely greater where cattle have grazed versus never grazed areas due to the removal of residual forage. Findings from Crane et al (2001) lend support to this supposition. They found that seasonal elk use increases in areas where cattle grazed the previous summer versus areas that had been rested. On Mount Haggin WMA, Frisina (1992) found that during early summer, elk use increased in pastures that had been grazed by cattle the previous

year. Use switched, however, during July and August (when cow elk are rearing calves) to the rested pasture where more security cover and forage was available. This use supports the fact that the benefits of a rest-rotation system are not just increased forage for elk but also for the standing vegetation that is left for thermal, hiding, and nesting cover for birds, amphibians, reptiles, and other small mammals.

In general, the WMA hosts a variety of native plants in desired amounts. Repeat photos do not suggest a decline in health and vigor of the plant communities within the Mount Haggin WMA-South and North grazing systems, but in fact show a positive response to the management strategies that FWP has employed since acquisition of the property. Non-native plants are present on the WMA in small amounts and are not causing a negative shift in plant composition. Noxious weeds that have been identified on this portion of the WMA include spotted knapweed, Canadian thistle, and white top. Ongoing weed management on the WMA has included both chemical herbicides and bio-control releases in compliance with FWP's Integrated Noxious Weed Management Plan.

Alternative A: Renewal of the Mount Haggin WMA-South grazing lease with an increase in AUM's for the Ralston Ranch. Some changes in the vegetation community on the WMA are expected under the continuation of this grazing lease and the increase in AUM's. Vegetation in pastures that have been grazed that year will look grazed. Two years of rest during the growing season following a year of being grazed during the growing season allows plant communities to quickly recover from grazing pressure. The overall stocking rate will decrease compared to what it had been a few years previously, reducing overall grazing pressure across the WMA due to the expansion of this system to include pastures that had previously been used in a separate system. As monitoring has already shown, it is expected that this grazing program would continue to positively influence native vegetation by providing maximum rest during the growing season two out of every three years. This promotes plant vigor and health and produces the highest quality potential forage for wildlife as well as nesting, thermal, and hiding cover for other native species. This benefit to vegetation will additionally extend beyond the WMA to BLM- and USFS-administered lands that are incorporated into this system. This rest-rotation grazing system, therefore, will benefit vegetation on a combined 5,200 acres of upland and riparian habitat on the Ralston Ranch deeded ground as well as the BLM allotment. This benefit will result from the CCAA and Upland Game Bird contracts. This property constitutes excellent mountain grouse habitat, primarily dusky grouse, as well as winter range for elk and an Arctic grayling spawning channel. The Ralston Ranch will relinquish their grazing permits on the USFS Lincoln Park and Calvert Hill grazing allotments. This action will give the USFS more management flexibility to deal with resource issues on these allotments and ultimately will improve 5,200 acres of rangeland through reduced livestock use. Positive benefits to vegetation under this alternative using sound range management and cooperative programs would be realized on approximately 30,000 acres and 64 stream miles of riparian habitat.

Cattle would likely have negative impacts to riparian areas such as stream bank trampling and mechanical damage to willows. Much of this can be mitigated by periods of scheduled rest and actions taken by livestock producers to prevent their cattle from concentrating in these areas.

Mineral blocks would be used to manage livestock. Blocks would be placed in mutually agreed upon locations such as rocky areas and hard-packed ground that provide minimal disturbance to vegetation.

Alternative B: Renewal of the Mount Haggin WMA-South grazing lease without increasing AUM's for the Ralston Ranch. Same as Alternative A except that no increase to Ralston Ranch AUM's on the WMA grazing system would result in a reduction in the stocking rate. However, if the Ralston Ranch is not allowed to put additional livestock on the WMA grazing system, they will continue to graze their deeded ground and associated BLM at the current stocking rate under the current grazing design which does not allow for vegetative rest. They will additionally continue to utilize their USFS allotments rather than relinquish their permits. Overall habitat conditions on these cumulative acres are likely to be negatively impacted over time.

Alternative C (No Action): Elimination of livestock grazing on the Mount Haggin WMA-South grazing system. If the Mount Haggin WMA-South grazing lease is not renewed, residual vegetation on the WMA would accumulate due to the lack of removal by livestock. Big game, birds, amphibians, reptiles, and mammals would benefit from the ungrazed grasses. Negative impacts to vegetation across the landscape would occur, however. Removing livestock grazing on the WMA may cause cattle use to increase on the USFS Seymour allotment which would negatively impact the plant community on those acres. Similar to Alternative B, the positive benefits resulting from renewing the Mount Haggin WMA-South grazing lease with an increase of use by the Ralston Ranch will not be realized.

2. Fisheries and Water Resources

The Mount Haggin WMA-South grazing system contains 11 streams and approximately 37 stream miles of riparian habitat. All of these streams are located within the Big Hole River watershed. The fish community in American Creek consists of eastern brook trout and mottled sculpin. The fishery in California Creek contains eastern brook trout, rainbow trout, mountain whitefish, and mottled sculpin. It may also contain Arctic grayling, brown trout, and white and longnose suckers because of similar gradient and stream characteristics to nearby streams that maintain these species. French Gulch and Moose Creek only contain mottled sculpin and brook trout; however, surveys completed up until the late 1990's found Arctic grayling in French Gulch. Moose Creek formerly contained an unhybridized population of westslope cutthroat trout, but recent surveys indicated that population has disappeared. The fishery status of Lincoln Gulch and Dry Gulch is unknown. Deep Creek contains brown, brook and rainbow trout, mountain whitefish, Arctic grayling, mottled sculpin and white and longnose suckers. All age classes of Arctic grayling have been captured in Deep Creek indicating its importance for spawning. Seymour Creek contains brook trout, mottled sculpin, and potentially westslope cutthroat trout (surveys have not been conducted recently). This creek is also an important spawning channel for Arctic grayling. Sullivan Creek contains brook trout and mottled sculpin. Sullivan Creek upstream of the WMA has a low pH (5.4) and is devoid of fish and other aquatic life. However before reaching the WMA, the pH approaches neutral, and fish and aquatic life are present. Twelvemile, Corral, and Tenmile Creeks contain brook trout, mottled sculpin, and conservative populations of westslope cutthroat trout. Sixmile and Sevenmile Creeks contain brook trout, mottled sculpin, and rainbow trout. Western pearlshell mussels, a sensitive species, are also present in California Creek and in Deep Creek. Deep Creek contains one of the

healthiest populations of mussels in the Big Hole drainage. It is possible that pearlshell mussels are present in lower Sullivan, Tenmile, and Twelvemile Creeks, but surveys have not been conducted to document occurrence.

Alternative A: Renewal of the Mount Haggin WMA-South grazing lease with an increase in AUM's for the Ralston Ranch. Livestock grazing is expected to have minor negative impacts to riparian areas and the associated fisheries under Alternative A. Stream banks and riparian areas on the Mount Haggin-South grazing lease are particularly susceptible to grazing impacts due to geomorphology and stream channel type. The majority of streams on the WMA area are classified as "C" channel types under Rosgen Stream Classification System (Rosgen 1996) with a low to moderate stream gradient and a highly sinuous stream channel. The riparian vegetation is predominately willows, grasses, and sedges, and these plants are the primary features stabilizing the stream banks. Potential impacts to these sensitive areas include removal of stream bank and riparian vegetation through grazing and trampling. Grazing has been shown to impact riparian vegetation and change species composition and cover. Juvenile willows are particularly susceptible to livestock grazing as are certain species of sedges. Both of these plant groups are important for stream bank stability. Destabilizing stream banks through trampling and hoof shear can lead to increased erosion and sedimentation. Further, as streams become widened by trampling, their ability to transport fine sediment is reduced. This leads to further siltation and degradation of aquatic habitat. Trout require clean gravels for spawning and egg incubation, and if the interstitial spaces between gravels become filled with fine sediment, egg survival decreases dramatically. High levels of fine sediment can also be detrimental to western pearlshell mussels and aquatic invertebrates which are a major food source for fish species. An additional impact of livestock on fisheries is the direct trampling of redds (fish spawning areas). Recent studies in the Beaverhead-Deerlodge Forest indicate that redd trampling rates in streams can be high. Trampling can lead to direct egg mortality as incubating eggs are highly susceptible to disturbance. Because brook trout (Sept-Oct spawners) are the primary species in these streams, redd trampling will not have a significant impact on the fisheries population. Only under late-season grazing would there be redd trampling impacts because eggs of fall spawning fish incubate through the winter and hatch in spring (May-June) when livestock are not present. Although westslope cutthroat trout (spring spawners) are present in Twelvemile, Tenmile, and Corral Creek, they are very rare on the Mount Haggin WMA. Impacts to this species as a result of redd trampling is therefore unlikely. Arctic grayling are also spring spawners, but do not excavate redds; they broadcast their eggs in freshly deposited gravels, which make egg-trampling effects difficult to quantify.

Impacts of livestock grazing on the fisheries and riparian areas of Mount Haggin WMA-South pastures are expected to be minor and mitigated by light stocking rates and periods of rest. Further, the existing healthy riparian conditions can withstand impacts of light grazing, particularly under the rotational grazing system proposed. Surveys conducted in 2010 on the Mount Haggin area did not note any significant impacts of livestock on the stream banks or riparian areas. Implementing the grazing plan associated with the Upland Game Bird contract will allow the Ralston Ranch to continue in the CCAA program which will benefit not only Arctic grayling and other fisheries habitat, but improve water quality and in-stream flows. Ralston Ranch has worked with FWP for over 5 years implementing numerous conservation projects on their land through the CCAA program (off-stream stock watering systems, channel

restoration, riparian fencing, and installation of irrigation headgates and measuring devices). Continuation of conservation projects on the Ralston Ranch would move forward with the proposed Alternative A.

Alternative B: Renewal of the Mount Haggin WMA-South grazing lease without increasing AUM's for the Ralston Ranch. This would be the same as Alternative A but with less potential for impacts on the WMA due to fewer cattle on the grazing system. However, in the absence of increasing the allotted usage of the Ralston Ranch on the WMA, none of the benefits to fisheries and riparian habitat on private, BLM, and USFS ground from the contingency actions will be realized.

Alternative C (No Action): Elimination of livestock grazing on the Mount Haggin WMA-South grazing system. Under this alternative, there will be no trampling, siltation, or other negative impacts caused by livestock use in riparian areas. Periodic grazing of riparian areas can be a valuable practice for controlling weeds and rejuvenating willows and other riparian vegetation, so the complete elimination of grazing may pose potential negative impacts to riparian community health. None of the benefits to fisheries and riparian habitat on private, BLM, and USFS ground from the contingency actions will be realized.

3. Wildlife

Montana Fish, Wildlife & Parks acquired Mount Haggin WMA in 1976 primarily as wildlife habitat and for recreational opportunities for the public. At the time of FWP's acquisition, there was a population of 400-500 elk in Hunting District 319 which encompasses the Mount Haggin WMA-South grazing system. This herd grew to over 1,400 elk by the mid to late 1990's. Hunting District 319, as stated in the Elk Management Plan (FWP 2005), is part of the Fleecer Elk Management Unit (EMU) along with Hunting District 341. The population objective for the EMU is to maintain the number of elk observed during post-season aerial surveys within 15% of 1,475 elk (1,250 – 1,700). The objective for HD 319 calls for a maximum of 1,100 elk. Liberal hunting seasons, designed to reduce the population across the EMU during the early 2000's, resulted in a steady reduction in the number of elk observed throughout the district. These observations were done during post-season aerial surveys. Current elk numbers are below the range of the population objective (683 total elk observed in HD 319 in 2010). Hunting opportunities, as a result, have been restricted in HDs 319 and 341 during the current biennium until numbers rebound. The area of the Mount Haggin WMA-South grazing system constitutes important elk calving areas and summer range.

The south side of Mount Haggin WMA provides summer range for mule deer and a small population of white-tailed deer (<20). Trend data for Hunting District 319 indicate that the mule deer population has fluctuated between 300-800 animals since the time of acquisition with a high of over 1,000 mule deer in the mid 1980's. In recent years, the population has been on a downward trend with the number of animals observed during aerial surveys being 300-500 (299 mule deer observed in HD 319 in 2010).

Mount Haggin WMA is part of Antelope Hunting District 318. The south side of the WMA provides summer range for 60-100 animals that migrate annually through the Upper Big Hole

valley from the Bannack area. Current antelope populations in this district are on an upward trend with over 1,200 counted in the north half of the district in 2009.

The south side of Mount Haggin WMA provides year-round range for moose. The number of observed animals in the Mount Haggin WMA area during recent winter aerial surveys has been 14-37. Some of the variation in number is due to winter conditions that greatly affect observability of moose. Preliminary results from a graduate study in progress in this area show that adult cow moose are heavily dependent upon willow communities during the winter season and also rely on these communities for calving and calf rearing throughout the summer and fall.

Mountain lions, bobcats, coyotes, and black bear occur throughout Mount Haggin WMA and the surrounding area. At this time, there is one known pack of wolves utilizing the WMA.

Sandhill cranes nest in the wet meadow complexes found on the south side of Mount Haggin WMA. Blue grouse, Franklin grouse, and ruffed grouse occur on Mount Haggin WMA as well as a variety of small mammals, amphibians, and reptiles. No population estimates have been made for these species.

FWP, in an effort to be more comprehensive in management of wildlife species, initiated a comprehensive bird survey of Mount Haggin WMA. This survey effort began in 2010 and will conclude in 2011. Final results from this effort will be recorded in the revised Mount Haggin WMA Management Plan, as well as compiled in a birder checklist, available to the public. In addition to the bird survey, FWP will repeat a small mammal survey and inventory of the WMA in 2011. The initial effort was conducted in 2006.

Alternative A: Renewal of the Mount Haggin WMA-South grazing lease with an increase in AUM's for the Ralston Ranch. Continuation of the cooperative Mount Haggin WMA-South grazing lease is intended to be beneficial for all wildlife. Grazing treatments are timed to leave high quality vegetation that is attractive to wildlife including summering big game as well as birds, amphibians, reptiles, and other mammals. The increase of AUM's proposed under this alternative will be mitigated by the increased acreage now available for this grazing system. Applying a cooperative rest-rotation system across ownership boundaries extends the benefits of systematic vegetative rest to over 19,000 acres of state and federal lands in addition to 11 streams and 37 stream miles of riparian habitat. In addition, these benefits will be further extended to include 5,200 acres of deeded and BLM ground through an Upland Game Bird contract and the Big Hole Grayling CCAA with the Ralston Ranch. This acreage, through a rest-rotation grazing system and reduced stocking rates, contains important dusky (blue) grouse habitat. Elk winter range will benefit as well. The Ralston Ranch will relinquish their grazing permits on the USFS Lincoln Park and Calvert Hill grazing allotments. This action will give the USFS more management flexibility to deal with resource issues on these allotments and ultimately will improve 5,200 acres of rangeland through reduced livestock use. Under this alternative, positive benefits to wildlife and its habitat would be realized on almost 30,000 acres and 64 stream miles of riparian habitat.

Alternative B: Renewal of the Mount Haggin WMA-South grazing lease without increasing AUM's for the Ralston Ranch. This would be the same as Alternative A but without the added

benefits of actions resulting from increased Ralston Ranch usage on the Mount Haggin WMA-South grazing lease.

Alternative C (No Action): Elimination of livestock grazing on the Mount Haggin WMA-South grazing system. Elimination of the Mount Haggin WMA-South grazing lease will negatively impact wildlife across the landscape in the long term. There may be more forage, nesting, and hiding cover available in the short term on the WMA and the embedded BLM acres that are managed as part of the WMA. Without FWP's participation in the cooperative grazing program, however, the USFS would be unable to apply an independent rest-rotation system to their allotment and would likely manage the grazing under a system that does not allow for vegetative rest. This would greatly reduce the quantity and quality of available vegetation for a variety of wildlife species. The absence of livestock grazing on Mount Haggin WMA would then nullify the Ralston Ranch's Upland Game Bird contract which was designed to greatly improve their deeded ground as well as the associated BLM allotment. They would not be able to implement their grazing management plan to meet the riparian health requirements for the Big Hole Grayling CCAA, and they would not relinquish their use on two USFS allotments located in elk winter range.

4. Soil Resources

Soils in the area of the Mount Haggin WMA-South grazing pastures are primarily of sedimentary and alluvial origin, ranging from slightly developed and very shallow on the steeper slopes to highly developed and deep in the stream bottoms. Soils are classified as coarse- and fine-loamy Mollisols (Alt and Hyndman 1986).

All Alternatives: Soils on this portion of the WMA during the past century have been exposed to disturbance from livestock movements, wildlife movements, mining, and logging. If Alternatives A or B are selected, some disturbance or displacement of soil will occur under the grazing system. Such disturbance would be minor due to the design of the grazing system giving pastures rest during the growing season for two years following grazing during the growing season. Such treatments promote soil stability over time because they allow sufficient time for plants to recover growth and carbohydrate reserves, and to establish new seedlings. Some disturbance to the soil from livestock grazing in the fall is beneficial for seedling establishment through seed trampling (Hormay 1970). No disturbance or displacement of soil from livestock grazing would occur if Alternative C is chosen.

III. EVALUATION OF IMPACTS ON THE HUMAN ENVIRONMENT

1. Access and Recreation

The South grazing system portion of Mount Haggin WMA is located in deer/elk Hunting District 319. Recreational hunting in this district is very popular due to the large proportion of public land as well as proximity to Butte and Anaconda. In 2009, approximately 1,355 elk hunters spent approximately 9,466 days in the field during hunting season. Deer populations in this hunting district provided approximately 530 hunters with approximately 4,409 days spent hunting. The WMA also provides moose, antelope, black bear, mountain lion, and mountain grouse hunting opportunities in addition to trapping for furbearers and coyotes. Opportunities for camping,

hiking, wildlife watching, photography, and other forms of non-consumptive recreation are boundless.

Alternative A: Renewal of the Mount Haggin WMA-South grazing lease with an increase in AUM's for the Ralston Ranch. The presence of cattle would minimally restrict recreational use of the WMA, mainly in the form of opening and closing pasture gates. Some members of the public may be impacted aesthetically, depending on their level of tolerance for the presence of livestock on the WMA. Cattle would only occupy one of three WMA pasture complexes (as shown in Table 1 and Figure 2) during the period of use, and the recreating public would be permitted full access and use of the WMA even in the pasture that is occupied by cattle. Bear hunting comprises the main activity on this portion of the WMA during the spring. Due to the timing of the grazing season start (June 16) and the close of bear season in this district (June 15), the grazing system won't impact bear hunting activity. Wildlife viewing is also a popular activity on the WMA from spring through fall. The presence of livestock may cause some temporary displacement of wildlife, but this would be mitigated by the redesigned pasture system. This system would incorporate additional pastures thereby reducing the overall density of livestock on the ground. Grazing in the fall is concurrent with several game hunting seasons. Minor impacts to these recreational activities can occur due to the presence of livestock (game being spooked by the livestock, visual impacts to hunters and other recreationalists, opening and closing gates, etc). Cattle would be removed from the WMA prior to the start of big game general season.

Contingent upon an increase in use by the Ralston Ranch, additional recreational and access opportunities would be gained across a wider landscape. The Ralston Ranch, in lieu of payment to the department for additional livestock grazing on the WMA, would enroll their deeded acres in a 15-year Upland Game Bird contract. Terms of this contract would apply a rest-rotation grazing system to their deeded ground and the associated BLM Connor Gulch allotment, reduce the stocking rates, and allow 50-80 hunter days annually to the Ralston Ranch. The grazing system applied to the Ralston's deeded ground and BLM allotment will also augment actions already taken on the Ralston Ranch to improve riparian habitat, allow fish passage, and prevent entrainment for native fisheries including fluvial Arctic Grayling. Improved riparian and fisheries habitat will also increase the fishing opportunity and quality on an already popular fishing resource existing on the property. The Ralston Ranch has a total of 6.93 river stream miles flowing through the property and currently allows open access to anglers.

The Ralston Ranch will additionally relinquish permits on two USFS allotments and the USFS will not fill in behind them. The proposed action and its contingencies overall would positively impact the quality and quantity of recreation and access in the area. This would be accomplished by implementing sound management to improve vegetation and habitat conditions on over 30,000 acres of public and private land for the benefit of native fish, wildlife, and the recreating public.

Alternative B: Renewal of the Mount Haggin WMA-South grazing lease without increasing AUM's for the Ralston Ranch. The impacts would be the same as Alternative A with respect to those directly occurring on the WMA. However, none of the benefits associated with contingencies to increasing the Ralston Ranch grazing usage would occur.

Alternative C (No Action): Elimination of livestock grazing on the Mount Haggin WMA-South grazing system. Complete elimination of livestock from the WMA would not significantly affect access except that the public would not need to close gates along interior pasture fences while recreating on the WMA. Otherwise, the public would continue to have full access and use of the WMA. Complete elimination of livestock from the WMA may increase hunting and wildlife watching opportunities on the WMA in the short term. Cattle would not be present on the WMA to offend some segments of the public who do not like to recreate on public lands in the presence of livestock. Habitat quality over time and in the absence of livestock grazing on the WMA could suffer, however, across the landscape (i.e. across ownership boundaries, both federal and private) leading to a decrease of wildlife and native sport fishing opportunities. This could lead to a decrease in hunting, fishing, and wildlife viewing opportunities on the WMA. None of the benefits associated with increasing the Ralston Ranch grazing usage would be realized.

2. Community Impacts and Land Use

Alternative A: Renewal of the Mount Haggin WMA-South grazing lease with an increase in AUM's for the Ralston Ranch. Three locally owned ranches would be allowed to utilize a portion of Mount Haggin WMA for summer livestock grazing. The proposed grazing treatment would have a positive influence on the productivity and economics of existing public and private land use in the area. This alternative would result in an increase to the annual usage that is currently allowed on this portion of the Mount Haggin WMA (current: 321 AU/1,191 AUM; proposed: 499AU/1,846AUM). The increase of use would result in the Ralston Ranch relinquishing two USFS permits (5,200 acres total) which the USFS would not refill. In addition, the Ralston Ranch would enroll in an Upland Game Bird Habitat Enhancement Project contract. This contract would allow for a rest-rotation grazing system and reduced stocking rates applied to 5,200 acres of deeded and BLM ground. These actions would cumulatively have a positive influence on the productivity and economics of public and private land use in the area.

Alternative B: Renewal of the Mount Haggin WMA-South grazing lease without increasing AUM's for the Ralston Ranch. This would be the same as Alternative A except no increase in use would be given to the Ralston Ranch. Therefore, none of the contingent actions would be taken.

Alternative C (No Action): Elimination of livestock grazing on the Mount Haggin WMA-South grazing system. Under this alternative, there would be no livestock grazing on this portion of Mount Haggin WMA. FWP would continue to manage the WMA for the benefit of its natural resources (wildlife and vegetation) while providing for the public access to hunt and recreate. Current lessees would have to locate additional summer grazing lands for their livestock. The Ralston Ranch would not enroll in an Upland Game Bird contract, would not be able to implement the proposed grazing agreement in the CCAA site plan, would continue to stock their deeded ground and BLM allotment at the current rate, and would continue to use their two USFS allotments.

3. Cultural and Historic Resources

This portion of Mount Haggin WMA has a long history of human use. Homesteading, livestock grazing, logging, and mining have all been part of the historical uses of this property. Numerous

buildings in various states of decay and associated with various past uses of the land can still be found on the WMA. A chert outcrop located on the WMA apparently served as a source of rock for arrowheads and other tools that date back to prehistoric periods.

If Alternative A or B were implemented, livestock grazing on the WMA may cause some disturbance to existing cultural or historic resources. Most of the cabins, etc., however, are beyond repair, and it has been the policy of FWP to let nature reclaim them. FWP would consult with the State Historic Preservation Office for guidance and assistance if previously undiscovered resources were discovered.

4. Risk/Health Hazards

None of the alternatives are expected to result in increased risk or health hazards to humans or wildlife. Noxious weed control within the WMA will involve the use of chemical herbicides which will be applied in recommended amounts. This procedure should have minimal impacts on nontarget vegetation under all alternatives.

5. Public Services

Alternative A: Renewal of the Mount Haggin WMA-South grazing lease with an increase in AUM's for the Ralston Ranch. This alternative would result in a commitment of FWP funds for continuing oversight to maintain the Mount Haggin WMA-South grazing system. Such maintenance would include fence repair and replacement, weed maintenance, etc. In order to fully implement the grazing system as proposed in this assessment, two fencing projects are required. The first involves replacement of 0.6 miles of non-functioning 25+ year old jack-leg fence plus erection of 1 mile of new fence in the Mule Ranch pasture. The other fencing project is located on the boundary between USFS and FWP property in the Tenmile Creek drainage. Funds from this project are expected to come from a Beaverhead-Deerlodge National Forest Resource Advisory Committee grant while funds for the Mule Ranch fence project will come from WMA operation and maintenance funds.

This alternative would have a positive impact on state and local tax revenues by maintaining three local livestock operations and a wildlife/recreation based economy in the area. Direct revenue includes fair market compensation (DNRC grazing rate for 2010 was \$6.12/AUM) for 321 AUMs for the summer grazing. In exchange for an additional 178 AU/659 AUM of summer grazing on the WMA, the Ralston Ranch will enroll 2,600 deeded acres in an Upland Game Bird Habitat Enhancement Project contract.

Alternative B: Renewal of the Mount Haggin WMA-South grazing lease without increasing AUM's for the Ralston Ranch. Same as Alternative A.

Alternative C (No Action): Elimination of livestock grazing on the Mount Haggin WMA-South grazing system. Same as Alternative A regarding fencing costs except that only boundary fences would need to be maintained while interior pasture fences could be left in disrepair.

IV. PUBLIC PARTICIPATION

1. Public involvement:

The public will be notified in the following manners to comment on this current EA, the proposed action, and alternatives:

- Two public notices in each of these papers: *Montana Standard* and *Anaconda Leader*
- One statewide press release
- Public notice on the Fish, Wildlife & Parks web page: <http://fwp.mt.gov>, and
- Copies of this environmental assessment will be distributed to neighboring landowners, local sportsmen's clubs, county commissioners, and other interested parties to ensure their knowledge of the proposed project.

2. Duration of comment period:

Written comments will be accepted until 5:00 p.m., February 28, 2011, and can be mailed to the address below:

Mount Haggin WMA-South Grazing Lease
Montana Fish, Wildlife & Parks
1820 Meadowlark Lane.
Butte, MT 59701

Or email comments to: vboccadori@mt.gov. Please put "Mount HagginWMA-South Grazing EA" in the subject line.

V. EA PREPARATION

1. Based on the significance criteria evaluated in this EA, is an EIS required? (YES/NO)? No.

Based upon the above assessment, which has identified a very limited number of minor impacts from the proposed action, most of which can be mitigated, an EIS is not required and an environmental assessment is the appropriate level of review.

2. Person responsible for preparing the EA:

Vanna Boccadori	Emma Cayer
Butte Area Wildlife Biologist	Riparian Conservation Specialist
Montana Fish, Wildlife & Parks	Montana Fish, Wildlife & Parks
1820 Meadowlark Lane	730 North Montana Avenue
Butte, MT 59701	Dillon, MT 59725
(406) 494-2082	(406) 683-2675

3. List of agencies or offices consulted during preparation of the EA:

Ralston Ranch, Bacon Ranch, Thompson Ranch
Montana Fish, Wildlife & Parks: Fish and Wildlife Division, Legal Bureau
Montana Natural Heritage Program
U.S. Forest Service, Beaverhead-Deerlodge National Forest
Bureau of Land Management, Butte Field Office

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APPENDIX A: STOCKING RATES ON MOUNT HAGGIN WMA-SOUTH and NORTH GRAZING SYSTEM

	Season of Use [#]			AUMs grazed per pasture								Grazing Fee						
Year	Pasture 1 (East side)	Pasture 2 (Mule Ranch)	Pasture 3 (Forest)	Pasture 1 (East side)	Pasture 2 (Mule Ranch)	Pasture 3 (Forest)	Actual AUMs	Allowed AUMs	\$ per AUM	FWP revenue (excludes BLM and DNRC fees)								
1984	late	rest	early	no record	0	no record	-		-	no record								
1985	rest	early	late	0	no record	no record	-		-	no record								
1986	early	late	rest	no record	no record	0	-		-	no record								
1987	late	rest	early	no record	0	no record	-		-	no record								
1988	rest	early	late	0	no record	no record	-		-	no record								
1989	early	late	rest	no record	no record	0	-	4000	\$9.79	\$32,256.00								
1990	late	rest	early	no record	0	no record	-	4000	\$8.04	\$36,441.12								
1991	rest	early	late	0	1718	1330	3048	4000	\$9.61	\$28,580.57								
1992	early	late	rest	no record	no record	0	-	4000	\$10.58	\$33,485.70								
1993	late	rest	early	no record	0	no record	-	4000	\$8.06	\$39,647.98								
1994	rest	early	late	0	no record	no record	-	4000	\$11.40	\$36,493.22								
1995	early	late	rest	1750*	1750*	0	3500	4000	\$11.80	\$40,698.20								
1996	late	rest	early	1220*	0	1220*	2440	4000	\$11.90	\$28,840.75								
1997	rest	early	late	0	1221*	1220*	2441	4000	\$11.80	\$28,606.87								
1998	early	late	rest	1300*	1300*	0	2600	4000	\$12.30	\$31,119.00								
1999	late	rest	early	1200*	0	1200*	2400	4000	\$12.60	\$29,414.59								
2000	rest	early	late	0	1480*	1480*	2960	4000	\$13.20	\$38,247.03								
2001	early	late	rest	1300	897	0	2197	3500	\$4.94**	\$9,938.71								
	Grazing system extensively revised between the 2001 and 2002 grazing seasons ^{&}																	
	Season of Use [#]						AUMs grazed within WMA boundary (excludes AUMs on USFS)								Grazing Fee			
	Northern Pastures			Southern Pastures			Northern Pastures				Southern Pastures				Actual AUMs	Allowed AUMs [%]	\$ per AUM	FWP revenue (excludes BLM and DNRC fees)
	California Creek	Mule Ranch	10-Mile Creek	East Side (Moose)	Sullivan Creek	Seymour Creek	California Creek	Mule Ranch	10-Mile Creek	Sub- total	East Side (Moose)	Sullivan Creek	Seymour Creek	Sub- total				
2002	late	rest	early	rest	early	late	944	0	694	1638	0	326	323	649	2287	3496	\$6.20	\$13,221.38
2003	rest	early	late	early	late	rest	0	814	569	1383	454	515	0	969	2352	3948	\$5.77	\$12,609.21
2004	early	late	rest	late	rest	early	1058*	926*	0	1984	358	0	338	696	2680	3832	\$5.48	\$13,187.34
2005	late	rest	early	rest	early	late	690	0	621	1311	0	535	318	853	2164	3688	\$6.64	\$13,239.83
2006	rest	early	late	early	late	rest	0	666	599	1265	436	459	0	895	2160	3820	\$6.22	\$12,274.54
2007	early	late	rest	late	rest	early	1290	1290	0	2580	359	0	326	685	3265	3392	\$7.87	\$24,423.33
2008	lease ended			rest	early	late	lease ended				0	514	318	831	831	848	\$6.94	\$5,769.87
2009				early	late	rest					468	409	0	877	877	960	\$6.97	\$6,105.96
2010				late	rest	early					425	0	368	793	793	832	\$6.12	\$4,855.71
Total	38,996															\$519,456.91		

[#] the dates for season of use are approximately: early 6/15-8/15, late 8/16-10/5

* per pasture AUM use is approximate, derived from dates of use and total AUMs

** DNRC grazing rates were employed starting in 2001. In return for the lowered rate, lessees assumed the responsibility for fence maintenance

[&] revision of grazing system included going from 1 to 2 grazing systems and establishing a cooperative grazing agreement with the USFS - pasture boundaries and rotation systems were revised to incorporate USFS pasture lands which were previously major trespass sources

[%] Allowed AUMs change annually due to difference in land allocation within each pasture by ownership.

